

# Zero Retries issue 0225 2025-10-25

*Zero Retries is an independent newsletter promoting technological innovation in and adjacent to Amateur Radio, and Amateur Radio as (literally) a license to experiment with and learn about radio technology. Radios are computers - with antennas! Now in its fifth year of publication, with 3200+ subscribers.*

About Zero Retries

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## Request To Send

*Commentary by Editor Steve Stroh N8GNJ*

### Paid Subscribers Update

My thanks to **Bob Kehr KA9MDP** for *renewing* as an **Annual Paid Subscriber** to Zero Retries this past week!

My thanks to **Prefers to Remain Anonymous 55** for one year of being a **Monthly Paid Subscriber** to Zero Retries as of this past week!

*Financial support from Zero Retries readers is a significant vote of support for the continued publication of Zero Retries.*

### Thank You, Readers, for the Thoughts on the (Not Excessive) Length and Detail of Zero Retries

A number of Zero Retries readers contacted me, publicly and privately, after my blurb **Zero Retries Digest Redux** in Zero Retries 0224 about (what was perceived as) changing the format of Zero Retries to be less verbose and more “digest-ey” and thus easier to consume.

I’m very grateful for everyone who read that blurb and responded. It was heartening to know that many folks read Zero Retries to that detail, and took the time to offer their thoughts.

I’m particular grateful to Zero Retries reader Dj for this exchange in the comments of Zero Retries 0224:

*Steve, one of the things that makes Zero Retries worth reading every week is the verbosity and level of detail. Please do not shorten it, blurb it out, or otherwise “dumb it down”. You’d be taking away one of the critical reasons why I read the newsletter “cover to cover” every week.*

Dj - Thanks for the kind words. My musings were only imagining “refactoring” Zero Retries for easier, more casual reading for those that seem to need that. No dumbing down, no less detail, just imaging some forms of alternative presentation of the same content. Zero Retries wouldn’t be nearly as interesting and fun and worthwhile FOR ME TO WRITE without the current level of detail.

As I wrote to another reader / commenter (I don’t remember where now), somehow my brain has organized itself to “analyze best” by writing stuff down, trying to explain things I (think) I understand, in text. Thus, that long form, detailed text has to be created first, and the vast majority of that currently goes into Zero Retries.

Bottom line, Zero Retries will continue as long form, detailed content available for those (many) that prefer that. But there seems room for some “refactoring” of Zero Retries content, in addition to the long form, detailed version. I think I have figured out a way to do so with only a minor increase in the workload of creating Zero Retries every week. Zero Retries will be different in 2026... not taking away anything from what it is now, but adding different... *presentations*...

### Western Washington University Develops Electrical and Computer Engineering Department

This development of a full [Electrical and Computer Engineering Department](#) at “Western” here in Bellingham, Washington was, in my opinion, *a big deal*.

Western Washington University’s College of Science and Engineering has launched its Electrical and Computer Engineering (EECE) Department as well as its first engineering graduate program, which will admit its first cohort next fall.

EECE was previously a program housed in the Department of Engineering and Design.

The expansion of the EECE program into a department allows the college to meet the needs of students in the increasingly popular major.

“The decision to create a new department for electrical and computer engineering was based on a number of factors, but primarily the motivation was to accommodate the significant and sustained growth in student demand for these majors, as well as the demand for graduates with these degrees across the region and state,” said CSE Dean Janelle Leger. “Recently, Western received state support to increase access to electrical and computer engineering degrees at Western, making the expansion of those programs and the structure to support them even more critical and impactful.”

Students will be able to choose from four programs within the major: electronics, energy, artificial intelligence and machine learning, or wireless networking and signal processing.

Re-read that last sentence...

*wireless networking and signal processing.*

Sound like a familiar theme of a certain newsletter also published in Bellingham?

I've reached out via email earlier this week to Professor Andy Klein who is the EECE Department Chair to offer my services to help incorporate Zero Retries Interesting Amateur Radio subjects such as GNU Radio operating on Amateur Radio spectrum into the *wireless networking and signal processing* program. I have reason to be hopeful - Professor Klein became licensed as KG7WFT this past July.

The first students in the WWU EECE program arrive in Fall, 2026. Hopefully there will be some Zero Retries Interesting Amateur Radio infrastructure ready and waiting for them such as a SuperPeater, AREDN, GVDATA, CATS, etc. as well as Meshtastic and MeshCore.

**Weekends Are For Amateur Radio!**

Have a great weekend, all of you co-conspirators in Zero Retries Interesting Amateur Radio activities!

Steve N8GNJ

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**What's New at Digital Library of Amateur Radio & Communications — October 2025**

By Kay Savetz K6KJN

Internet Archive's Program Manager, Special Collections and Zero Retries Pseudostaffer

*Greetings from — not DLARC Headquarters in Oregon, but from Internet Archive headquarters in San Francisco, California.*

Earlier this week the Archive held a party to celebrate the milestone of [one trillion web pages](#) archived in the Wayback Machine. The [Wayback Machine](#) is a tool that has been backing up the web since 1996, then lets people see websites as how they used to be — and websites that no longer exist at all. A trillion pages saved is an amazing milestone, and I'm thrilled to be here in the Great Room at Archive HQ to celebrate with colleagues and community.

Last month I mentioned the addition of 80+ issues of Radio Communications Monitoring Association's [RCMA newsletter](#). If you've already managed to read all of those, don't fret because we have found and scanned [another two dozen issues](#) from 1979 through 1985. (The collection is filling in nicely, but if you have any issues that we lack, let me know.)

We added [170 newsletters](#) from the "Association of Clandestine (radio) Enthusiasts". Their monthly newsletter was called A\*C\*E: dedicated to pirate radio and the "clandestine listening" hobby. It was published from about April 1982 through September 2005. Founded by Darren Leno, an active pirate DXer, Leno operated the club and newsletter for the first few years. Later, it was headed up by others. It included profiles or interviews of pirate stations, regular columns, and technical articles. During its early-to-mid 1980s heyday, it also included articles and loggings of spy-number stations. For most of modern pirate radio history, the A\*C\*E was the source for the exchange of logs and maildrop information for pirates. We scanned some issues from paper, then I found many more issues that others had scanned.

California Historical Radio Society sent a batch of videotapes [that we've digitized](#), including several tapes of Military Radio Collectors Group and Military Radio Restoration Group [meetings and presentations](#) from 1998 through 2001.

For newsletters that are less clandestine and more ham radio, we've added 28 issues of [GroundWave](#), the newsletter of the Saint Paul (Minnesota, USA) Radio Club.

Hundreds of newly scanned radio manuals continue to arrive in the [DLARC Manuals collection](#) — here's the link with the newest material on top. This is largely material from last summer's raid of Fair Radio Sales, with oodles of military radio guides, service and repair manuals, and schematics. That collection is pushing 8,500 items, with 2,150 added so far in 2025.



From Editor - Image from ChatGPT with prompt “Simple line art drawing of a library combined with an “under construction” graphic, then “change LIBRARY to DLARC”.

Something else I’ve been working on that’s still in progress, but not as finished as it will be. I dug up a trove of Usenet newsgroup posts about amateur radio. Usenet was the discussion board of the early Internet. Well before the web, Usenet was one of the ways Internet strangers found each other to discuss myriad topics. There were a lot of Usenet discussion groups about radio, and some were very active.

So now DLARC has text and pdf versions of some of these discussions. There’s an archive of the Usenet group [net.ham-radio](#) from 1981 through 1986, and one of the group [net.ham-radio.packet](#) from 1985 to 1986. In 1987 or so, Usenet groups were all renamed and reorganized (in a process unsurprisingly called the “Great Renaming”). Of the renamed groups, we have [rec.radio](#) from 2000-2004, [rec.ham-radio.packet](#) (1987-2004) and [rec.radio.amateur.digital](#) (2000-2004). I’m not quite sure what differentiated *digital* from *packet* in these discussions — I suppose all packet radio is digital, but not all digital radio is packet. And finally (for now) the group [rec.ham-radio.swap](#) from 1989 through 2005. They are an incredible trove of radio conversations, all full-text searchable, of course.

I’ve added these all to the [DLARC E-mail Lists and Usenet archive](#), which also has radio-related email discussion groups going back to the dawn of the Internet age. I say this is “not as finished as it will be” because I have archives of 15 other Usenet newsgroups that aren’t ready for prime time, including discussion groups about space communications, Citizens Band, DXing, and more. I’ll let you know when those are polished and easier to use.

*Digital Library of Amateur Radio & Communications is funded by a generous grant from Amateur Radio Digital Communications ([ARDC](#)) to create a free digital library for the radio community, researchers, educators, and students. If you have questions about the project or material to contribute, contact me at [kay@archive.org](mailto:kay@archive.org).*

DLARC want list: <https://archive.org/details/dlarc-wantlist>

**Editor's Note** - I'm *thrilled* that DLARC now has archives of those Amateur Radio related Usenet groups. There was one related to Amateur Radio TCP/IP, or perhaps it was rec.ham-radio.packet. When I had occasional moments at work to peek in on that group, *every* time I was able to peek at it, I learned *a lot*. Of course, those discussions are in the distant technological past, but as I keep (re)discovering from such archival information, many of those discussions / concepts were way ahead of the technology of that era and lacked critical mass to attempt them. But perhaps such ideas can be "easily" implemented now, thanks to cheap, powerful computers, Linux and other free and embeddable operating systems, and, of course, Software Defined Radio technology.

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## The (Amateur Radio) World Has Changed For Me

By Steve Stroh N8GNJ

*2025 was a formative year in my perspective of radio technology. Radio technology has made the change to Software Defined Radio (SDR) technology, and "hardware defined radio" is now the trailing edge of radio technology.*

In my Amateur Radio experience, I can reflect back to how formative it was for me to read 73 Magazine every month. I was a subscriber for years before I became licensed in 1985. I marveled at the creativity, the energy, the "technology forward" perspective that put 73 in a very different category than other Amateur Radio publications that largely "explained conventional Amateur Radio".

One of the most profound things about 73 was that Editor Wayne Green W2NSD/1 mentioned frequently beginning in the mid-1970s was microprocessors, *microprocessors*, and *microprocessors*. Then microcomputers. In almost every issue, both of those technologies were mentioned in service to radio technology and Amateur Radio. Not just in packet radio, but in Amateur Radio in general even for such mundane things as Morse Code generation and decoding. At times, W2NSD/1's promotion of microprocessors seemed "ahead of his skis".

I think of W2NSD/1 more frequently now that I find myself in the something of the same position as he was trying to "kickstart" the readership of 73, and Amateur Radio in general, into accepting microprocessors as "state of the present" in radio technology. In my case, the "state of the present" is Software Defined Radio.

*Admittedly, those on the leading edge of radio technology for perhaps the last decade, perhaps two decades, were there ahead of my new perspective. To those that are ahead of the rest of us, thanks for being patient.... we're coming now.*

My big shop - N8GNJ / Zero Retries Labs, is filled with Amateur Radio equipment that was relevant over the course of my Amateur Radio career from the mid-1980s through present day. Increasingly, when I look at it, the vast majority is now antiquated. Some of that equipment continues to be useful. But now, in late 2025, when I look at it from my new "SDR is the state of the present" perspective, the vast majority of my accumulated equipment is *no longer relevant to where I see Amateur Radio heading in the mid-2020s and beyond*.

Thinking back over the course of 2025, I can readily identify three distinct "moments" that shifted my perspective of Software Defined Radio from just another "Zero Retries Interesting" technology to *the state of the present in Amateur Radio*.

### LinHT - Linux (and GNU Radio) Handie Talkie (Handheld Radio)

The most profound shift in my perspective of SDR in 2025 was the creation of the [LinHT](#). I'm confident that by the end of 2026, derivatives of the LinHT will be available, assembled and tested, in multiple forms (handheld, mobile, quite possible in a tower mounted configuration that could be used as a repeater / node. LinHT is just so breathtakingly the right concept for *Amateur Radio of this era*.

### GNU Radio Conference 2025

It's been more than a month now since GRCon 2025 concluded, and my mind is still returning and "delayed processing" is completing in my mind about some of the things I learned about at GRCon 2025. The one primary factoid that I was told... that more than half of the GRCon 2025 attendees came to GRCon 2025 as already licensed Amateur Radio Operators, was startling to me.

That concentration of GNU Radio technologists being already Amateur Radio Operators is enough of a critical mass for some interesting experimentation in Amateur Radio. My one issue with trying to participate in that community - "GNU Radio Hams" is that they're communicating amongst themselves (GNU Radio community in general) on Discord... and I'm not yet active on Discord. Getting online on Discord for GNU Radio, and some other Amateur Radio communities on Discord is yet another priority for me in 2026.

### Exponentially Improving Radio Technology in Ukraine

I have no idea what video I watched on YouTube. Mostly the video explained the circuitous route a group of Ukraine drones had taken to attack a target deep inside Russia. As background, the video explained how advanced and robust Ukraine's drone communications systems had become to overcome Russia's communications jamming capabilities. Ukraine is now using very advanced, very capable frequency hopping technology to sidestep aggressive, powerful broad spectrum jamming by Russia. Ukraine drones are able to switch modes, frequencies, and interleave video, telemetry, and coordination with the other drones in the group.

What I found most remarkable is that the communications packages on the latest Ukraine drones are developed by Ukraine, and the drone radio hardware is low-cost, mostly off the shelf (Ukraine customizes the firmware), lightweight, and power efficient. Some of the Ukraine drone radios are optimized for specific roles. Some drones were designated to be "video observers" and loiter while the attack drones, well, attack. Other Ukraine drones are communications relays at that loiter at designated intermediate points - essentially acting as repeaters that positioned miles-high. Other Ukraine drone roles include more sophisticated Global Navigation Satellite Systems receivers that have extra hardware to receive GNSS signals despite Russian jamming of GNSS and can then relay reliable GNSS data to the Ukraine attack drones.

Another remarkable radio-related development in Ukraine is the personal two way radio communications units. Instead of cellular with fixed base stations, or use of satellites, Ukraine's battlefield radio communications is now peer to peer mesh networked as well as encrypted, and can easily interleave data and voice on a single handheld (or belt worn) radio unit.

Taken together, these three "forefront of mind" developments in 2025 are harbingers of how fast radio technology is evolving in 2025 and beyond. That faster pace of radio technology development is "driven" by the use of Software Defined Radio technology. Thus 2025, for me, is another "1975" (before, and after microcomputers) where you can look back and see a paradigm shift occurring and knowing that the technology developments in the years ahead... radio technology, in this case, will be very different than in previous years.

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## Followup on How to Get (Re) Started in Amateur Radio Data Communications

By Ben Kuhn KU0HN

**Editor's Note** - This is a followup to my article in **Zero Retries 0222 - How To Get (Re) Started In Amateur Radio Data Communications**. KU0HN is Zero Retries Founding Member 0005, and a regular commenter. KU0HN made some excellent points such as if a 1200 bps network exists in your area, joint it! One of my gripes about radios manufactured in China is there are many similarly named variants from different companies and I have a hard time following a recommendation such as KU0HN's for the VR-N76 and asked him to provide details on how to purchase **this** radio, which is known to work well.

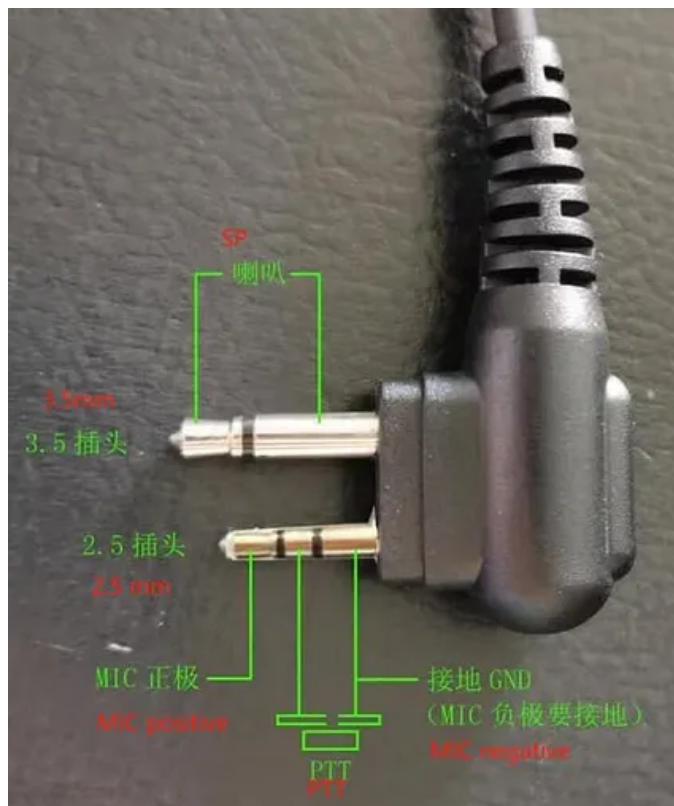
While I mostly agree about avoiding 1200 baud AFSK, it's probably worth mentioning that if a 1200 baud network already exists, using it is a great way to make friends and find other people to connect to on a faster/newer modes.

### Vero Telecom VR-N76

On the equipment side, I'd like to give a plug for the Vero VR-N76 (AKA BTECH UV-Pro or Radioddity GA-5WB) HT. It's the HT sibling of the VR-N7500 headless mobile that you covered on ZR a few years ago. Most of what you see online for this radio is its APRS features, and the Bluetooth KISS TNC support that was added in later firmware. Both of those are great. The KISS TNC works just like a mobilinkd, but with less clutter, although in my testing it seems the mobilinkd might perform a little better. The downside is it only supports 1200 baud with the internal TNC, for now anyway. I know a few people with this radio who carry it daily and use it for checking Winlink messages automatically on their phones with WoAD or RadioMail.

### Flat Audio!

The best feature of this radio, however, is that it supports flat audio on the accessory port (see the graphics below).





## New channel

DELETE

SHARE

SAVE

Title M17-Call

RX Freq FM 443.457 MHz &gt;

TX Freq FM 443.457 MHz &gt;

RX CTCSS/DCS Off &gt;

TX CTCSS/DCS Off &gt;

TX Power Low &gt;

Bandwidth 25KHz &gt;

Disable TX ☐Busy channel lockout ☐Mute ☐Talk Around ☐Allow scan ☐



# Pre/De-emphasis



I haven't seen anything about this feature online, including the pinout of the jack, but after BTECH support provided the pinout, I put a cable together and gave VARA-FM a test, and without any real tuning, was achieving sustained speeds of over 14.4kbps. I suspect a little time getting the deviation dialed in will bring the speed up even higher. I was impressed enough to order the newer Vera VR-N7600 mobile to test the capability there.

## Buying From a Reliable Source

These radios are sold under several makes/models, but they are manufactured by Vero Telecom from what I can tell. B-Tech, Radioddity, and others put their branding and firmware on the radio which is how we end up with the different variants. Everyone in our local group is using the B-Tech UV-Pro variant. I can recommend it, and it can be easily purchased in the US directly from B-Tech here: <https://baofengtech.com/product/uv-pro/>. B-Tech also has an Amazon store (and Amazon return policy) [https://www.amazon.com/stores/BTECH/page/39453F58-3D77-4EFE-93E7-A1C0C58012CF?is\\_byline\\_deeplink=true&deeplink=F48CCC4C-EF6E-43DB-81B7-DEB68E959AC0&redirect\\_store\\_id=39453F58-3D77-4EFE-93E7-A1C0C58012CF&lp\\_asin=B0DBW24N8M&ref=ast\\_bln&store\\_ref=bl\\_ast\\_dp\\_brandLogo\\_sto](https://www.amazon.com/stores/BTECH/page/39453F58-3D77-4EFE-93E7-A1C0C58012CF?is_byline_deeplink=true&deeplink=F48CCC4C-EF6E-43DB-81B7-DEB68E959AC0&redirect_store_id=39453F58-3D77-4EFE-93E7-A1C0C58012CF&lp_asin=B0DBW24N8M&ref=ast_bln&store_ref=bl_ast_dp_brandLogo_sto)

*Minor footnote. Yes, the URL is [baofengtech.com](https://baofengtech.com). B-Tech is simply a dealer that sells Baofeng radios and has expanded to include Vero Telecom (VGC) radios. I bought a VGC amp from them that I'm using with my NPR modem. I have had people be confused by this and my best explanation is that they are simply a dealer. Just like a Ford dealer may have Ford in the name, but isn't owned by Ford.*

## Using the VR-N76

I was introduced to the radio by a couple of members of my local packet community in Lewiston, Minnesota. I first heard about it from a member of our local packet chat net who mentioned that while at work, a couple of blocks from my QTH, he uses the HT in KISS mode to automatically check his Winlink messages throughout the day using my Winlink gateway. Another local bought one to use while traveling. I've been doing a fair bit of traveling recently, and anything to keep the TSA happy (less cables and batteries) makes my life easier. I first used mine to connect to the local packet network in KISS mode from the couch while at a cabin my wife and I visit occasionally. I had the radio outside connected to an Arrow antenna and was able to connect to one of the bigger packet stations about 40 miles away. From there I connected to my home BBS, checked and sent a few messages, and checked propagation for the day. On previous trips I used a Kenwood TH-D7 connected via serial, but that meant I had to be outside and deal with mosquitos. The couch is much more comfortable and convenient.

Last week I flew to Austin, TX for a conference. A little stalking of the BPQ node map and the Winlink node map showed a few stations that should be accessible from my downtown hotel room. Although my room was on the top floor, I was in one of the smaller hotels so, in practice, I was struggling to connect with AX.25. By this time I had discovered that VARA works well on this radio, so I had a digirig lite and cable along. With that I was able to send a few Winlink messages and explore the local packet network a bit. Being able to program the radio over bluetooth is extremely convenient as well. I haven't done much any bulk channel imports in to this radio. I've simply and quickly punched in the frequency and settings I need from my phone on an as-needed basis. I have done this while keeping cables to a minimum (you are welcome, TSA) and not having to deal with the usual driver nonsense that often accompanies Chinese radios.

Besides being a good travel companion, I have spent most of my time with the portable messing around with radio. I've checked in to the Winlink net that I run every Thursday for the past few weeks. This week's exercise is sending an image so I'm getting out the digirig and VARA-FM for that. Right now the radio is on the bench hooked up to a Module17 in the hopes to get M17 running on it. I just got the cable built so I need to dig out the scope and SDR to get the TX and RX levels dialed in. I have also been exploring the functionality of various mobile apps. WoAD has a terminal mode that works well for



connecting to packet networks.

### Other Features of G8BPQ BBS

Finally, while you mentioned BPQ's BBS, I feel like it's worth mentioning some of the other features as well. The BBS is just one application that plugs in to the main node application. The node supports *many* protocols besides plain packet. I'm using VARA HF, VARA FM, Mercury (although I haven't gotten any connects that way yet), ARDOP, and packet. It supports client connections as well emulating AGW and KISS. 44net and IP are supported as well. Supported applications are the BBS (as mentioned) which can do POP/IMAP for personal messages and NNTP for bulletins. A winlink gateway is just another BPQ application. There is a chat server that can connect to chat servers on other nodes. It reminds me of IRC a little. There is also a telnet interface that allows other applications to be connected. One sysop a couple hops away has Zork and a few door games on his node. Other users have built a web gateway that can proxy HTTP using a text-only browser. Most implementations I have seen of that are using PE1RRR (SK)'s Packet Browser here: <https://github.com/pe1rrr/packet-browser>

Finally, embarrassingly, or maybe not, I have yet to make a voice QSO with the VR-N76. That's just how I do radio I suppose.

*Editor's Note - I can relate! Of the vast majority of radios that I own, if the radio came with a microphone, it's pristine and unused, in storage.*

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## ZR > BEACON

By Steve Stroh N8GNJ

*Short mentions of Zero Retries Interesting items.*

### [Accessing the TAPR Annual Membership Meeting](#)

From the TAPR website:

The following are the instructions for accessing TAPR's Annual Membership Meeting on October 25, 2025:

TAPR Annual Membership Meeting 2025, October 25, 2025 03:00 PM Eastern Time (US and Canada)

Join Zoom Meeting:

<https://us02web.zoom.us/j/87005417960?pwd=vbnt30zQhUaJKaKVQk72SwT5F4z6FP.1>

Meeting ID: 870 0541 7960

Passcode: 536477

—

One tap mobile

+16465588656,,87005417960#,,,,\*536477# US (New York)

+16469313860,,87005417960#,,,,\*536477# US

Join instructions

<https://us02web.zoom.us/join/87005417960/invitations?signature=NHnT5DnTa4-t4cZVHVjTye4wVbZpZrbCjhQ6ZlItbGRE>

As always, it will be interesting to learn more about what TAPR is doing.

### [An Update on FreeDV's Baseband FM \(BBFM\) Technology](#)

From the ARDC Blog / News:

*Below is a guest contribution from David Rowe VK5DGR of FreeDV. If you're a grantee and are interested in submitting a guest contribution, please reach out to [giving@ardc.net](mailto:giving@ardc.net).*

The [FreeDV](#) project has recently published a paper on their Baseband FM (BBFM) technology. This technology provides unprecedented speech quality and robustness for VHF/UHF land mobile radio (LMR) applications, with experimentally verified 10 dB performance gains over current analog FM and digital systems.

Use cases for LMR include VHF/UHF walkie talkies, and two-way radios in vehicles for applications such as amateur radio, public safety, mining, and recreational vehicles.

Existing protocols for LMR include P25, Tetra, DMR, M17, D-STAR and C4FM. Classic analog FM also remains popular, as its speech quality is competitive with digital systems and is low cost. While a variety of LMR protocols continue to emerge, the speech quality and physical layer performance of LMR systems hasn't evolved since the mid 1990s.

BBFM technology presents a modern, machine learning (ML) approach for the LMR physical layer using open source software. This can be considered a drop-in replacement for the classical vocoder/FEC signal processing on radios using the BBFM architecture and can be applied

to existing or emerging LMR protocols.

After 12 months of building this technology, the FreeDV project has recently released a paper, *RADE for Land Mobile Radio: A Neural Codec for Transmission of Speech over Baseband FM Radio Channels*, which is now available on [arxiv.org](https://arxiv.org). This paper is written at a professional technical level and has a description of the BBFM technology, including design, derivation of our linearised FM model, training, ASR evaluation results, and a demo over UHF radio hardware.

A more general overview of BBFM, which includes demo samples and a GitHub branch with source code, can be found on the FreeDV website: <https://freedv.org/rade-bbfm/>.

This work was a collaboration between David Rowe of the [FreeDV](https://freedv.org) project with Tibor Bece and George Karan, veterans of the LMR industry with 30 years experience and 2 million radios manufactured. David's work was kindly supported by our [grant](#) from ARDC. While the main focus of our grant is HF, we realised RADE technology could also be applied to VHF/UHF to provide high quality, robust, open source, patent free digital speech.

On the "more general overview of BBFM page linked above, the difference between weak signal FM and D-Star and BBFM is *stark*, as in *no* comparison.

That last sentence:

While the main focus of our grant is HF, we realised RADE technology could also be applied to VHF/UHF to provide high quality, robust, open source, patent free digital speech.

*True, that.* While the speech samples are exciting, it's very clear that BBFM is secondary to FreeDV (for HF use). There's no hints of where you can learn more about BBFM (other than the academic paper), no installer, no basic explanation for using BBFM (presumably, a good audio interface unit), whether a flat audio connection on the FM radio is required, etc.

It will be an interesting to see a side by side comparison of BBFM versus DMR, the most popular digital voice system in Amateur Radio.

Another statement:

One disadvantage of RADE is the need for more CPU and memory than legacy protocols, which were developed for the constraints of the processors available in the 1990s. However the resources required for RADE are a fraction of that available on a modern laptop or mobile (cell) phone, and likely to fall further with more development.

is an interesting potential combination of using a mobile device as the BBFM "modem" coupled (perhaps via Bluetooth) to a streamlined portable (or mobile) radio that no longer needs a (user) audio stage - no microphone, speaker, etc. is needed since that would be done on the mobile device.

But there's also the potential of using a Raspberry Pi 5 Compute module which costs (quantity one) as little as \$45. FreeDV has already been ported to the Raspberry Pi 5, and presumably the compute requirements of BBFM are similar to FreeDV.

Lastly, the combination of (easy) implementation of an FM waveform combined with BBFM's modulation would be "easy" to implement with a Software Defined Transceiver. The potential for the Radio Autoencoder (RADE) technology used as a vocoder replacement for the proprietary CODECs of DMR and D-Star, or Codec 2 in M17 might be the strongest recommendation for implementing all of this in a Software Defined Transceiver such as the LinHT-how well would a combination of, say, DMR with a RADE vocoder work, compared to BBFM? "It's just software" in a SD Transceiver to do such testing.

BBFM would be tough to implement, at least in the US, as a new technology for use in commercial or government two way radio systems. But it's easy to implement in Amateur Radio - just start *using* it, including over an FM repeater.

Thus BBFM is yet another example of the importance of Amateur Radio as, effectively, *the experimental radio service* that can be used to prove out new radio technology, potentially at scale if it becomes popular.

I look forward to the FreeDV project making BBFM available for general use, with an installer, some basic documentation, etc.

Kudos to VK5DGR, Tibor Bece, George Karan, and ARDC for funding this kind of fundamental... and Zero Retries Interesting technological innovation in Amateur Radio.

### **Direction Finding (Bunny / Transmitter Hunting) in 2025**

In a YouTube video titled [I Was Losing Every Time ... Until I Tried This](#), Jason Oleham KM4ACK explains a new (to him) method of Radio Direction Finding - adding a selectable attenuator, in addition to using a directional (beam) antenna. Radio Direction Finding (RDF) is a radio sport, and a popular recreational activity within Amateur Radio. Like Parks / Summits On The Air, RDFing adds an element of physical activity to "having fun with radios". Depending on one's skill level of RDFing, locating a transmitter with a handheld directional antenna, and changing an attenuator can take a while to locate a transmitter, especially an intermittent transmitter.

But if it were me doing (Automatic) Direction Finding, I'd be using a [KrakenSDR](#) unit, with the proviso that doing so pretty much requires doing so with a vehicle as 5 antennas (plus GNSS receiver) must be set up in a specific, static array (varies depending on frequency being received).

KrakenSDR is one of those technological innovations in radio (it's a receiver, so no license is required, not exclusive to Amateur Radio) that just leaps out to me as *the better / best way* to do *Automatic* (as opposed to manual, as KM4ACK is doing) Direction Finding. With KrakenSDR, there are no moving parts, map display is automatically plotted, any frequency from 24 MHz to 1766 MHz can be "DFed" with no change in hardware, etc.

Although I couldn't find a specific reference, it seems feasible to me to set up communications between multiple KrakenSDR units to develop precise location of a transmitter using triangulation from multiple receive locations. Every few minutes, or perhaps every few seconds, each KrakenSDR could share with the other units in the system their respective positions and the bearing of the signal in question. With enough triangulation information, a good estimate of the transmitter's location could be generated.

### **DEF CON 33 Videos (including RF Village) Are Live**

DEF Con 33 (US, 2025) was held 2025-08-07 thru 10 in Las Vegas, Nevada USA.

RF Village is a “Special Interest Group” focusing on radio technology during DEF CON conferences. Looking up DEF CON 33 and RF Village, I learned that RF Village is sponsored by [The Rf Hackers Sanctuary](#).

The RF Village presentations about radio technology (RF Village) are now available - see [https://www.youtube.com/results?search\\_query=+DEF+CON+33+-+RF+Village+](https://www.youtube.com/results?search_query=+DEF+CON+33+-+RF+Village+)

All (“a few hundred”) of the DEF CON 33 videos are now available:

<https://www.youtube.com/playlist?list=PL9fPq3eQfaaBB9HANwjaTIKFuVhRxdz2>

Also at DEF CON conferences [including DEF CON 33](#), there is *Ham Radio Village* sponsored by [Ham Radio Village](#) (a registered IRS 501(c)3 exempt organization). Ham Radio Village also exhibits at other conferences. I didn’t see mention of any DEF CON 33 presentations by Ham Radio Village, only RF Village.

My thanks to Joe Hamelin W7COM for letting me know about this item.

### [How to Get Started With Outreach](#)

Great article (and video) from ARDC:

Earlier this year, ARDC invited a panel of experts on marketing, outreach, and building partnerships to help our grantees with one of the most common challenges we see – getting the word out about their programs.

In the video recording [here](#), Dan Romanchik KB6NU, John Schouten VE7TI, and Jim Idelson K1IR share tips to leverage the resources you have to improve your outreach strategy. Key excerpts and additional insights from our past funded grant projects are listed below.

#### **The Basics**

##### **1. Set your goals**

When you first begin thinking about how to design your outreach plan, it’s important to set specific, manageable goals. If your goal is to sign people up for a course or event, for example, determine how many people you need to make it a successful event. If you want to grow your club membership, decide how many new people you want to add. This will help you track data to determine if the strategies you are using are working or if you need to change course.

Consider your budget and who you have available to help with outreach. Set goals that are manageable for the resources you have. Deciding how many events a year you will attend, what marketing materials you will produce, and how you will get the word out in a written outreach plan will help you be effective.

##### **2. Define and know your audience**

There are different tiers of audience to consider – you can think of it as a funnel. On the one end, you have a stranger on the street who knows nothing about your program or anything related to it. On the other end, you have people who already know you and who love your work who are the most likely people to sign up to participate at your events. Different marketing strategies will help you reach different aspects of that audience and will therefore need different messaging. For example, if you are boothing at a county fair, you’re talking to the general public. If you are boothing at an electronics conference, you’re talking to a specialized audience who may already know you. This is a simple concept, but keep it in mind as you develop your plan.

The above is just a brief excerpt from the article to provide some context. The entire article is well worth a read, and I’m going to make time to watch the video.

The entire article is distilled wisdom - **recommended**. There are a number of points in the article that I discovered “the hard way” in my publication and advocacy of Zero Retries. For example, trying to promote Zero Retries at a very general Amateur Radio conference (SEA-PAC) didn’t make much impact. But at the “techier” Pacificon conference, our promotion of Zero Retries went very well. Thus, to me that’s ample validation of other suggestions in the article.

KB6NU is a Zero Retries Pseudostaffer and former ARDC Communications Manager. VE7TI is one of the leaders of Surrey Amateur Radio Communications and the Editor of their very successful The Communicator bimonthly newsletterzine that regularly exceeds 100 pages and is a worthy “competitor” to paywalled publications in Amateur Radio.

### [OpenMesh Voice Network](#)

From the OpenMesh website:

OpenMesh creates open-source mesh radios that deliver high-quality voice & data over resilient networks for amateur & emergency communications.

**OpenMesh Voice Network** grew out of a simple observation: daily amateur radio life revolves around voice repeaters, yet those single points of failure require significant maintenance and professional resources. They often collapse when operators most need them—during storms, wildfires, and other disasters. Our team of volunteer hams and digital-comms researchers set out to remove that vulnerability by marrying low-cost software-defined radios with a modern, AI-powered voice codec. The result is a fully open-source mesh system that carries clear voice and lightweight data over battery-friendly VHF/UHF links. Hence, daily conversations and emergency traffic flow even when towers or internet backhauls go dark.

#### **What we’re building**

- **Mesh voice & data nodes** – A low-cost transceiver delivers a 50 kbps channel split into four TDMA time slots, forwarding packets hop-by-hop with store-and-forward resilience.

- **Studio-quality audio at 4 Kbps** – An open neural codec preserves natural speech while fitting into narrow amateur-band channels, backed by dual-layer FEC and Reed-Solomon error protection for rough RF paths.
- **Open to the core** – Schematics (KiCad), firmware, routing code, Android/desktop apps, docs, and training videos will all live in public repos under permissive licenses, ensuring anyone can learn from, build on, or deploy the tech without gatekeepers.

### Why it matters

Traditional repeaters demand expensive sites and constant upkeep; whole communities fall silent when they fail. By contrast, a self-healing mesh of small nodes lets operators in remote villages, search-and-rescue teams, and emergency coordinators drop in coverage wherever it's needed, with no cranes or leases required. Beyond crisis use, the same network keeps daily rag-chews, club nets, and technical round-tables alive, sustaining the social glue of amateur radio.

### Our purpose

We exist to **keep people connecting and talking**—and to do it in a transparent, hackable, and welcoming way. By publishing every line of code, every trace on the board, and every lesson learned, we hope to spark a new wave of experimentation in digital voice, inspire classrooms and maker spaces, and give the global ham community a resilient, modern alternative to 20th-century repeaters.

I love the implementation of TDMA (4 time slots) and the specific support for data as well as digital voice. Presumably if the time slots aren't being used by voice, they could be used for data at the maximum rate of 50 kbps. I'll be particularly interested in their development of:

A low-cost transceiver delivers a 50 kbps channel split into four TDMA time slots

as I think that TDMA, especially when it can be used as a single channel repeater, has huge potential in Amateur Radio.

My thanks to a Zero Retries reader who Prefers to Remain Anonymous for pointing out this project to me for mention in Zero Retries.

Incidentally, [Open Collective](#), the fiscal sponsor of OpenMesh, is also the fiscal sponsor of a number of [other Amateur Radio projects](#).

### Why Mesh Networks Break When Big Crowds Gather

Margo Anderson in IEEE Spectrum:

#### **Real-world crowd models are remaking decentralized tech**

A decentralized networking technology originally built for battlefields and [Burning Man](#) is today being reimagined from the ground up.

[Mesh networks](#)—named for their fishnet-like connections—emerged over the past few decades from rigorous, mathematical [research](#) on keeping data flowing even when portions of [a system fail](#). But the theory hasn't always matched up to reality. Real-world [mesh networks](#) have proved vulnerable to shutdowns in some of [the very settings](#), such as certain kinds of large crowds, they're supposed to be good at handling.

So researchers from City College of New York, [Harvard](#), and [Johns Hopkins University](#) have recently built a prototype [mesh networking](#) system that's been hardened for some of the most challenging and adversarial environments around: political protests.

In a [paper](#) presented last week at the ACM [Conference on Computer and Communications Security](#) in [Taipei, Taiwan](#), the researchers announced a prototype [mesh network](#) called Amigo. Amigo, for starters, has been designed to work in environments where the [Internet](#) has been shut off, as seen during unrest in [India, Iraq, and Syria](#), among other countries.

I was particularly interested in this idea:

Dynamic-clique routing basically allows groups of nodes to self-organize routing units in a geographic area based on GPS.”

With these two significant radio-based mesh networking projects being launched in 2025, radio-based mesh networks are hot again. My personal estimate / vague memory is that radio-based mesh network technology is seriously revisited every decade or so. Thus it's probably appropriate to do again with the radio and inexpensive computer technology that's available in 2025 and beyond. This particular team seems like a good combination of talents for such research. I'm going to try to do some reading about Amigo.

As always, I think Amateur Radio, Amateur Radio spectrum, and Amateur Radio Operators are ideal for experimenting with OpenMesh, Amigo, and Meshtastic and MeshCore, and perhaps eventually IP400. Or maybe it's time to revisit Net/ROM using more powerful “routers” and higher speed radio links using Forward Error Correction (FEC).

### **Next ARDC Grant Tranche is 2026-02-01**

ARDC reached out to me with a request to remind Zero Retries readers that deadline for the next round of ARDC grant proposals is 2026-02-01.

ARDC is specifically interested in grant proposals that correlate with ARDC's newly developed funding priorities, which were unveiled earlier this year: <https://www.ardc.net/apply/priority-areas-for-funding/>.

ARDC is especially interested in projects that align with these three areas:

- **Research & Development (R&D):** open hardware and software systems that enable learning and experimentation (e.g. SDRs, open codec technologies, new modulation techniques).
- **Space-Based Communications:** projects that create or expand access to satellite communications for amateur radio (AR) and digital communications (DC), engaging communities in wireless experimentation (e.g. GEO or HEO programs, repurposed commercial satellites, space-based tools for learning).
- **Open Source Education:** scalable, open educational materials and hands-on projects that make AR and DC more accessible, especially

for new learners and clubs (e.g. curricula, videos).

While grant proposals to ARDC don't *have* to correlate to the areas above, it's apparent that grant proposals that are correlated with the above will be "fast tracked" within ARDC's grant evaluation process.

I hope that *some way could be found* for ARDC to fund and thus accelerate the development of the [LinHT](#) (Linux Handie Talkie) Software Defined Transceiver in the form of a handheld radio. No other project at this moment has the potential to advance Amateur Radio, and open source radio technology in general, as the LinHT.

Bruce Perens K6BP said:

LinHT is the most important hardware project in Amateur Radio today.

I concur with that assessment. *LinHT will happen!* I assess LinHT's potential to be unstoppable - it's just too good an idea and technology to not happen. But at the moment, LinHT development is being done with personal funds, personal time, and personal resources. Thus LinHT would happen faster, better, and have more impact if the LinHT could receive grant funding from ARDC. Just as one example, ARDC grant funding could pay for a number of (hand built) prototypes to be constructed and distributed to software developers who could then use them to create proofs of concept applications to convince radio manufacturers to create their own versions of LinHT - at scale, and reasonable cost.

Beyond LinHT, in my opinion the most urgent need for Amateur Radio development is to develop an open source Software Defined Transceiver for VHF / UHF that can transmit with at least 10 watts to be useful. Such a unit that could transmit at 25 watts would be ideal, and 50 watts would be *fantastic*. And if such a unit could be developed for the *1.25 cm band (219-220 / 222-225 MHz) band for use in North America...* that would be extra super special fantastic.

If you'd like help developing such grant proposals as I outline above, let's chat - [steve@zeroretries.net](mailto:steve@zeroretries.net).

**[EASY Packet Radio Interface from KM9G! SMS, Email, BBS, Network](#)**

From the KM6LYW Radio Patreon page:

Checkout Steve's TOADs Digital Interface which lets you interface your dual-band rig to a Raspberry Pi or PC. The engineering behind this is top-notch with an open interface and ham-made at a reasonable price. Combined with DigiPi and a Baofeng we can send/receive APRS/SMS messages, run a bulletin board and do keyboard-to-keyboard operations all for under a hundred bucks!

DigiPi SD card image, build instructions, shopping list (thank you patrons!)

<https://digipi.org/>

TOADs Digital Interface (thank you Steve/KM9G!)

<https://temporarilyoffline.com/DIGIPI>

In 2025, DigiPi has become supported with a number of great hardware interfaces, of which this one is just the latest.

**DigiPi 2.0 Released!**

From the KM6LYW Radio YouTube channel:

Amateur Radio DATA HotSpot! Operate with Your Phone! Build & Demo.

DigiPi 2.0 upgrades all your favorite radio apps with a re-base to the latest version of Raspberry Pi OS “Trixie”. A lot has changed under the hood to get Trixie working, including the latest beta of Direwolf and all new GPIO code. Thanks to all your testing, DigiPi went through eleven beta tests, so quality confidence is high, despite these potentially disruptive cutting-edge technology updates. Please use a new SD card to install DigiPi 2.0 and keep your old SD card handy in the event you need to make a quick switch back. The upgrade process is to reflash/reInitialize and optionally backup/restore folders “config”, “local”, “fldigi” and “flrig” with sftp/scp (FileZilla).

DigiPi 2.0-1 Changelog (from 1.9-4)

- Raspberry Pi OS Trixie/13, Linux kernel 6.12
- Direwolf 1.8Beta1 Packet-Modem/TNC/Tracker
- (Many, many more applications are included with DigiPi 2.0.)

Again, DigiPi has become one of the primary Amateur Radio data communications apps, primarily because it’s so easy to use by creating a DigiPi station which you operate entirely *remotely* (no additional keyboard, video, mouse hardware or software needed) on a laptop, desktop, tablet, or phone - *in a web browser*.

**LinHT Is The Cover Story of the CQ DL 2025-11 Issue**

[Wojciech Kaczmarek SP5WWP on Mastodon:](#)

M17 making headlines again, this time it’s the LinHT - our revolutionary, open-source handheld radio running Linux. Make sure to grab CQ DL 11-2025 :-)





LinHT-Projekt

# Linux auf Handfunk







On the CQ DL page for this issue:

LinHT-Projekt: Linux auf dem Handfunkgerät

LinHT ist ein Open-Source-SDR-Handfunkgerät auf Linux-Basis. Es bietet eine offene Plattform für eigene Software, unterstützt M17, FM, SSB und TETRA und basiert auf einem System-on-Module im Retevis-C62-Gehäuse. Ideal für Funkamateure, die flexibel experimentieren wollen.

Translation to English via ChatGPT:

LinHT Project: Linux on the Handheld Radio

LinHT is an open-source SDR handheld radio based on Linux. It provides an open platform for your own software, supports M17, FM, SSB, and TETRA, and is based on a system-on-module in the Retevis C62 housing. Ideal for amateur radio operators who want to experiment flexibly.

#### **Post Publication Update:**

*Zero Retries Pseudostaffer Ren Roderick K7JB reminded me that one of the benefits of the Mac's Safari browser is that on pages (that it detects) aren't in English, there is a small icon that appears to translate a page into English. That worked perfectly for the CQ DL page, and was, in my opinion, slightly better than ChatGPT:*

*LinHT project: Linux on the handheld radio*

*LinHT is an open-source Linux-based SDR handheld. It offers an open platform for own software, supports M17, FM, SSB and TETRA and is based on a system-on-module in the Retevis C62 housing. Ideal for radio amateurs who want to experiment flexibly.*

CQ DL is the primary publication of Deutschen Amateur-Radio-Club (DARC) in Germany.

I'm impressed enough with this to consider joining DARC to be able to receive the electronic version of CQ DL. See <https://www.darc.de/der-club/referate/ausland/english-version/> and scroll to the bottom:

#### **Become a member**

DARC offers a special membership for HAMs who live outside of Germany.

The price of the membership is for one year.

The membership class 01b does include the monthly delivery of the club magazine CQ DL. CQ DL is published in the German language. This membership does not include: liability insurance and QSL-Service. 99 Euros

The membership class 02e is for members, who constantly live outside of Germany. This class includes the membership-service on our website, including the monthly digital version of the CQ DL. This membership does not include: liability insurance, QSL-Service and the monthly postal delivery of the CQ DL. 49.20 Euros

Electronic publication is tempting because, while I don't read German, it's easy enough to copy text in German to get paragraphs or perhaps entire articles translated to English. Perhaps that's the insight that I need for Zero Retries to "keep tabs" on Zero Retries Interesting activity in Germany.

I could join DARC and receive their primary publication electronically that's clueful enough to feature the LinHT as a cover story... for less than the price ARRL membership and QST... which probably won't ever feature a development like the LinHT? Hmmm...

In any case, kudos once again to SP5WWP and the LinHT team for getting "cover story mention" in CQ DL, and to CQ DL's editorial staff for being clueful enough to feature the LinHT as a cover story.

#### **RepeaterBook is Here for You....Now and into the Future**

On the RepeaterBook website:

I wanted to take a moment to clear up a few misconceptions and provide some background on RepeaterBook's model and mission.

RepeaterBook has been serving the amateur radio community for over 20 years, and we're proud to have become one of the most trusted and widely used resources for repeater information worldwide. This isn't a short-term project or a passing hobby — it's a long-standing, continuously developed service with a proven track record of reliability and commitment to the amateur radio community.

Our core mission has never changed: everything that has been free will remain free. We continue to offer the full repeater directory and standard search tools at no cost, without requiring logins or subscriptions.

Over the years, we've evolved responsibly to reduce distractions and focus on quality. We've completely eliminated Google Ads and now

only feature ham-related sponsors and partners — organizations that share our values and actively contribute to improving amateur radio resources. Partnerships with companies such as RT Systems, ARRL, and projects like the Prepper Disk allow us to exchange data and enhance the accuracy and usefulness of everyone's tools.

Some newer, more advanced features — like Route Search, which uses Google's commercial mapping API, and Line-of-Sight prediction, which runs on the CloudRF modeling engine — do incur real costs billed to us monthly. For that reason, we've introduced a few optional premium tools that help offset those expenses. But the standard features, including directory searches, mapping, and app access, remain completely free.

It's worth noting that for many years, RepeaterBook was the free alternative when other directories charged for access. That hasn't changed — we're still committed to keeping repeater information freely available, accurate, and easy to use, while continuing to innovate responsibly and sustainably.

We appreciate everyone who supports the project — whether through data submissions, feedback, or simply by using RepeaterBook and sharing it with others. This community is the reason we've been able to grow and stay strong for two decades, and we're here for the long haul.

73,

Garrett Dow, KD6KPC / WREQ745

Owner & Administrator, RepeaterBook.com

The Official Source of Repeater Data for the ARRL Repeater Directory

I'm a fan of RepeaterBook. It's my goto resource for quick lookups of repeater information, and its iDevice app is incredibly useful (good info) and usable (easy, intuitive to use). I haven't invested in any of RepeaterBook's paid value-added services, but when I get back into traveling with a mobile radio, like possibly another cross country car trip, I certainly will do so.

I think of RepeaterBook so highly that it's just part of Amateur Radio infrastructure. I mean nothing derogatory when I say that I just take RepeaterBook for granted - it's a consistently useful utility that's always there.

Kudos to KD6KPC for such a great job with RepeaterBook.

### Raspberry Pi Unveils the \$18 Compute Module 0 — But Only for Chinese [Customers, for Now](#)

Gareth Halfacree on [hackster.io](#)

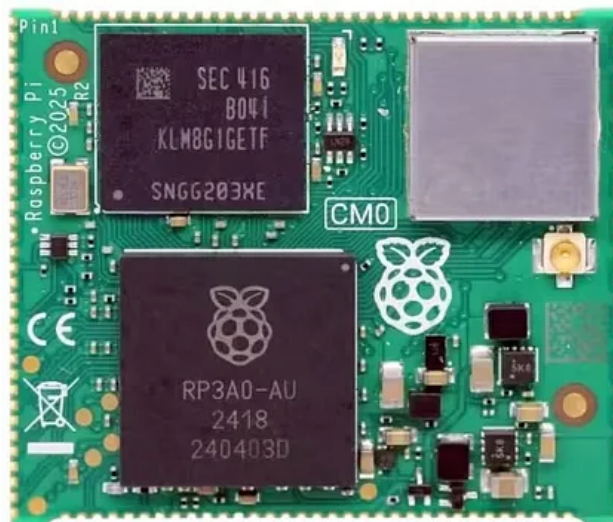


Image courtesy of [huckster.io](#)

Low-cost castellated “stamp” style module borrows the RP3 from the Raspberry Pi Zero 2 W and puts it in a new form factor.

Raspberry Pi has unveiled a new, cost-reduced entry in the Compute Module family of computers-on-modules (COMs) dubbed the Compute Module 0 (CM0) — starting at just \$18, but currently available exclusively in China.

Unveiled this week at the China International Industry Fair in Shanghai, the Compute Module 0 takes the heart of the Raspberry Pi Zero 2 W — the RP3 system-in-package — and places it on a high-pin-count castellated module much more similar in design to third-party microcontroller “stamps” than the Raspberry Pi Compute Module 4 or 5, developed in partnership with local firm Shanghai EDATEC.

The RP3 gives the module four Arm Cortex-A53 processor cores running at up to 1GHz and 512MB of LPDDR2 memory, matching the Raspberry Pi Zero 2 W, while elsewhere on the module is a Wi-Fi and Bluetooth radio module and a footprint for eMMC flash storage. There's a connector for an external antenna, but no other accessible ports — until you install it on a carrier board at least.

I talked to one Amateur Radio vendor this week about the CM0 and they were more interested in it than in the Compute Module 5 because the CM0 has enough, but not too much compute power (and expense) for their product, and the castellated edge solder connections are so much easier to work with

than the complex connector used for all previous Compute Modules.

I think that some of those hardware vendors making interfaces for DigiPi could now incorporate the CM0 and vastly simplify (and cost reduce) their designs by making their existing product and “just add CM0”. The CM0 also seems like a great (more applicable) compute module for, example, the HF Signals zBitx instead of the Raspberry Pi Zero 2 W currently used.

Bottom line - I understand that the CM0 was created by Chinese licensees of Raspberry Pi specifically for the Chinese market, but it’s too good an idea for it to be available only in China. Except, perhaps, for a brief exclusive period in China to pay for the Non Recurring Engineering necessary to create it. I think it will be just a few months before the CM0 is more widely available for OEM products, similar to the Raspberry Pi Pico microcontroller.

Leave a comment

Share

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## Comments Summary From Previous Issue

*Comments from Zero Retries 0224:*

- Discussion and pointers to the new GT-DV Open Source Digital Voice project by Jonathan Naylor G4KLX
- Appreciation for verbosity and level of detail in Zero Retries

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To receive new issues of Zero Retries every week via email, become a free subscriber. To support Zero Retries, paid subscriptions are appreciated, *but entirely optional*.

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## Zero Retries Boilerplate

The [Zero Retries Store](#) is now open for business with quality Zero Retries branded merchandise and items being retired from Steve’s N8GNJ Labs.

These bits were handcrafted (by a mere human, not an Artificial Intelligence bot) in beautiful Bellingham ([The City of Subdued Excitement](#)), Washington, USA, and linked to the Internet via [Starlink Satellite Internet Access](#).

See the **Zero Retries Boilerplate** page for significant acknowledgements and other information relevant to Zero Retries. For new readers of Zero Retries, that page, and the **About Zero Retries** page has useful information to check out.

My ongoing *Thanks* to:

Tina Stroh KD7WSF for, well, *everything!*

Jack Stroh, Late Night Assistant Editor Emeritus

Shrekky Stroh, Late Night Assistant Editor In training

### **Annual Founding Members who generously support Zero Retries financially:**

Founding Member 0000 - Steven Davidson K3FZT (Renewed 2025, *3rd year!*)  
Founding Member 0001 - Randy Smith WU2S (Renewed 2025, *3rd year!*)  
Founding Member 0002 - Chris Osburn KD7DVD (Renewed 2025, *3rd year!*)  
Founding Member 0003 - Don Rotolo N2IRZ (Renewed 2025, *3rd year!*)  
Founding Member 0004 - William Arcand W1WRA (Renewed 2025, *3rd year!*)  
Founding Member 0005 - Ben Kuhn KU0HN (Renewed 2025, *3rd year!*)  
Founding Member 0006 - Todd Willey KQ4FID (Renewed 2025, *3rd year!*)  
Founding Member 0007 and 0010 - Merik Karman VK1DF / VK2MKZ (Renewed 2025 x2, *3rd year!*)  
Founding Member 0008 - Prefers to Remain Anonymous 08 (Renewed 2025, *3rd year!*)  
Founding Member 0009 - Prefers to Remain Anonymous 19 (Renewed 2025, *2nd year!*)  
Founding Member 0011 - Rick Prelinger W6XBE (Renewed 2025, *2nd year!*)  
Founding Member 0012 - Ryan Tolboom N2BP (Renewed 2025, *2nd year!*)  
Founding Member 0013 - Newton White N4EWT (New 2025)  
Founding Member 0014 - Joe Hamelin W7COM (New 2025)  
Founding Member 0015 - Rich Stocking N7OP (New 2025)  
Founding Member 0016 - Prefers to Remain Anonymous 77 (New 2025)  
Founding Member 0017 - Phil Karn KA9Q (New 2025)  
Founding Member 0018 - Prefers to Remain Anonymous 95 (New 2025)

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**You thousands of readers of Zero Retries** without which there would be little point in publishing this newsletter.

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This issue released on 2025-10-25

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## Keywords for this Issue

Zero Retries 0225 dated 2025-10-24:

**Amateur Radio**, ARDC, Baseband FM, BBFM, **Data Communications**, **Digital Communications**, DigiPi, **Digital Voice**, Direction Finding, DEF CON 33, DFing, **DV**, GNU Radio Conference 2025, GRCon 2025, **Ham Radio**, LinHT, **N8GNJ**, OpenMesh, **Packet Radio**, **Radio Technology**, Raspberry Pi Compute Module 0, CM0, Repeaterbook, RF Village, **Software Defined Radio**, **Software Defined Receiver**, **Steve Stroh**, TAPR, Ukraine radio technology, Vero Telecom VR-N76, Western Washington University WWU, **Zero Retries**, **Zero Retries Digital Conference**, **ZRDC 2025**

*Keywords in **Bold** are regular mentions in each issue.*

*(The end)*